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Youth Overweight Increases Risk of Bone Fractures, Muscle and Joint Pain

Children and adolescents who are overweight are more likely than their normal weight counterparts to suffer bone fractures and have joint and muscle pains, according to a study conducted at the National Institutes of Health.

The researchers also found that the overweight youth in the study were more likely than non-overweight youth to develop changes in the knee joint that make movement more difficult.

The study appears in the June 2006 *Pediatrics*.

“Bone, muscle, and joint problems are particularly troubling in this age group,” said Elias A. Zerhouni, M.D., NIH Director. “If overweight youth fail to attain normal weight, they will likely experience an even greater incidence of these problems when they reach later life.”

A total of 355 black and white Washington, D.C. area children and adolescents took part in the study, explained the study’s senior author, Jack A. Yanovski, M.D., Ph.D., Head of the Unit on Growth and Obesity at NIH’s National Institute of Child Health and Human Development. Of these, 227 were classified as overweight and 128 as non-overweight. Upon entering the study, the children underwent a detailed physical examination and were questioned about whether they had experienced any joint, bone or muscle-related problems. Study participants were classified as overweight if they had a body mass index above the 95th percentile for their height and weight. Youth were classified as non-overweight if they had a body mass index above the 5th percentile and below the 95th percentile.

The study volunteers also provided answers to a questionnaire designed to gauge the impact their weight had on their quality of life, ranking on a 5-point scale whether statements about impaired mobility applied to them. Such statements included: “I have trouble using stairs,” “I feel clumsy or awkward,” and “I have trouble getting up from chairs.”

The study authors also used a technique known as Dual Energy X-Ray Absorptiometry (DXA) to detect any effects of overweight on the feet, ankles and knees.

The researchers found that the overweight youth were more likely to experience bone fractures and muscle and joint pain than were the non-overweight group. The most common self-reported joint complaint was knee pain, with 21.4 percent of overweight youth reporting knee pain and 16.7 percent of non-overweight youth reporting knee pain. The overweight youth were also more likely to report impaired mobility than the non-overweight youth. DXA scans showed that overweight youth were more likely to experience changes in how the bones of the thigh and leg meet at their knees, than were non-overweight youth.

In the article, Dr. Yanovski and his coworkers noted that while overweight children and adults have a greater bone density than their non-overweight counterparts, this greater density did not protect the youth in the study from bone fractures. The researchers cited other studies which concluded that being overweight means that an overweight boy is likely to fall with greater force than a non-overweight boy, and so is more likely to suffer a fracture. Moreover, they wrote, other studies have suggested that overweight boys have poorer balance than non-overweight boys, and so are more likely to fall.

“Efforts should be made to encourage health care providers’ recognition of the orthopedic complications of excess weight so that interventions can be initiated,” the study authors wrote. “Finally, significantly overweight children and adolescents should be encouraged to engage in alternative modes of physical activity, such as bicycle riding or swimming, that could alleviate the severity of lower extremity joint loading and discomfort.”

In addition to researchers at the NICHD, researchers from the NIH Clinical Center also took part in the study.

The NIH has developed a variety of on-line materials to help young people make healthy choices regarding diet and exercise.

A new NIH curriculum, Media Smart Youth, seeks to prevent youth overweight by helping youth evaluate the messages they see in the media and by making informed choices regarding diet and exercise. The Media Smart Youth materials are available at <http://www.nichd.nih.gov/msy>.

The NIH We Can! (Ways to Enhance Children's Activity and Nutrition) Program provides parents, caregivers and community organizations with practical tools to help children 8-13 years old stay at a healthy weight. Tips, fun activities, and curricula for parents and youth, including Media Smart Youth, focus on three critical behaviors: improved food choices, increased physical activity and reduced screen time. The We Can! Materials are available at <http://wecan.nhlbi.nih.gov> or by calling toll-free 1-

866-35-WECAN.

The NICHD sponsors research on development, before and after birth; maternal, child, and family health; reproductive biology and population issues; and medical rehabilitation. For more information, visit the Web site at <http://www.nichd.nih.gov/>.

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